TUNABLE SURFACE PLASMON INFRARED MODULATOR

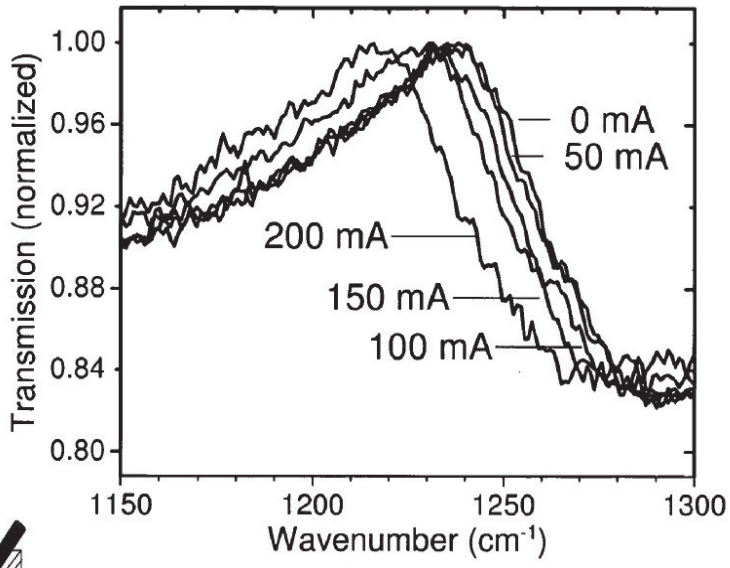
TECHNOLOGY READINESS LEVEL: 5

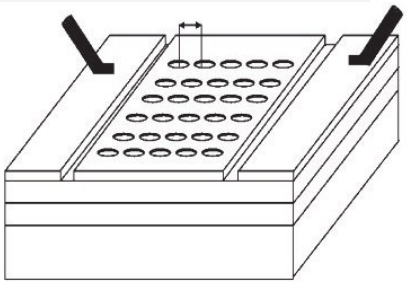
KEY COMPONENTS OF THIS TECHNOLOGY HAVE BEEN DEMONSTRATED IN RELEVANT ENVIRONMENTS.

US PATENT # 8,009,356

TECHNOLOGY SUMMARY

There is a need for improved active infrared optical elements such as modulators. Extraordinary optical transmission (EOT) through subwavelength apertures allows for tailored filtering based on plasmon resonance. Until now EOT devices have not fully achieved the need for variable attenuation capabilities. Sandia has developed an EOT device with a tunable surface plasmon resonance wavelength, where the controllability is derived from variation of the dielectric constant in the semi-conducting material in contact with the grating.





POTENTIAL APPLICATIONS

- Infrared Modulators
- IR Counter-measures
- Photonic Circuitry
- Metamaterials
- Chemical Sensing
- Variable Attenuation

TECHNOLOGICAL BENEFITS

- Can be made small
- Tunable control of dielectric
- Microfabricated

TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

ip@sandia.gov

Refer to SD # 10692

or visit

https://ip.sandia.gov

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